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1: *Chest* 2000 Mar;117(3):758-63

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Breath carbon monoxide as an indication of smoking habit.

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STUDY OBJECTIVE: To assess whether the breath carbon monoxide (CO) concentration can be used to determine a patient's smoking habits in a respiratory outpatient clinic. **DESIGN:** To provide a normal range for smokers and nonsmokers, 41 outpatients and 24 healthy subjects were questioned on their smoking habits and asked to provide two breaths into a CO monitor (EC50 Smokerlyser, Bedford Instruments; Kent, UK). In a subsequent single-blind study, 51 different outpatients were not told of the purpose of the study and were assessed by extensive questionnaire, spirometry, and Smokerlyser estimation. **SETTING:** The Chest Clinic and Pulmonary Medicine Department at the Northern General Hospital, Sheffield, UK. **PARTICIPANTS:** Phase 1 involved 41 outpatients attending the Chest Clinic and 24 nonoutpatient colleagues. In phase 2, an additional 51 different outpatients were studied. **MEASUREMENTS AND RESULTS:** The mean (SD) breath CO levels were 17.4 (11.6) parts per million (ppm) for smokers and 1.8 (1.3) ppm for nonsmokers ($p < 0.001$). A level of 6 ppm was taken as the cutoff, as this gave a selectivity of 96% and a sensitivity of 94% for outpatients. Of the 51 study patients, 5 admitted to smoking in the administered questionnaire. Eight denied smoking but had a mean breath CO > 6 ppm (7.5 to 42 ppm). Of these, three admitted to smoking after being explained the implication of the reading. **CONCLUSIONS:** Breath CO concentration provides an easy, noninvasive, and immediate way of assessing a patient's smoking status. A reading of 6 ppm strongly suggests that an outpatient is a smoker.

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Abstract

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